

REMARKS

The Examiner is sincerely thanked for careful examination of the application and for the detailed explanation of the outstanding rejections. However, in view of the foregoing amendments and the remarks that follow, the Examiner is respectfully requested to reconsider and withdraw the rejections.

Claim Objections:

In response to the claim objections, the identified claims have reviewed and carefully amended to avoid the use of the term "the forces". Accordingly, the Examiner is respectfully urged to reconsider and withdraw the outstanding objections to the claims.

Art Rejections:

Claims 1-6 and 22-30 and 34-36 have been rejected under 35 U.S.C. §103(a) as being unpatentable over DE 2118360, hereinafter *Nolan*, in view of GB 1107541, hereinafter *Shell*, and U.S. Patent No. 4,986,697, hereinafter *Lynch*. Claims 7-11 have been rejected under 35 U.S.C. §103(a) as being unpatentable over *Nolan*, in view *Shell* and *Lynch* and further in view of the standard bearing design as documented by the U.S. Patent and Trademark Office classification definitions for Class 384, Bearings. Claims 12-14 have been rejected under 35 U.S.C. §103(a) as being unpatentable over *Nolan*, in view *Shell* and *Lynch*, and further in view of the EP 000657670 A2, hereinafter *Brown*. Claims 15-18 and 31-33 have been rejected under 35 U.S.C. §103(a) as being unpatentable over *Nolan*, in view *Shell* and *Lynch* and further in view of of U.S. Patent No. 3,555,835, hereinafter *Smith*. Claims 1-6, 5-18, 22-33, and 34-46 have been rejected under 35 U.S.C. §103(a) as being

unpatentable over *Nolan*, in view U.S. Patent No. 3,668,878, hereinafter *Jones*.

Claims 7-11 have been rejected under 35 U.S.C. §103(a) as being unpatentable over *Nolan*, in view *Jones*, and further in view of the standard bearing design as documented by the U.S. Patent and Trademark Office classification definitions.

Claims 12-14 have been rejected under 35 U.S.C. §103(a) as being unpatentable over *Nolan*, in view *Jones* as applied above in view of common knowledge in the art, and is documented by *Brown*.

One of the objects of the present invention is to reduce the over stressing of pipelines when using a J-laying technique, as opposed to S-laying. The Examiner's attention is directed to the first two pages of the application, wherein the differences between S-laying and J-laying are carefully explained. In brief summary, in S-laying, as the pipe leaves the vessel, the pipe curves off the stern of the vessel, down toward the seabed, and then curves in the opposite direction at the bottom, thus forming an S shape. If the water is too deep, it is preferred to use J-laying techniques, wherein the pipe leaves the vessel at a much steeper angle, sometimes close to vertical. At the bottom, the pipe then curves away from the vessel, thus forming a J shape.

In conventional J-laying, the pipe has a shape of a J, and is therefore curved towards the bottom, but is straight towards the top. Thus, the pipe flows down the tower of the vessel along a straight path, whereas in S-laying, it is inevitable that the pipe will seek to assume a steeper angle of inclination immediately upon exiting the tower, which does not apply when J-laying which is conventionally carried out in deep water. If the water is too shallow, the pipeline may become over-stressed in a J-laying process if there is not enough room for the pipe to curve.

One of the objects of the present invention is to reduce the stress of pipelines when laid with a J-laying process, especially in shallow water. The invention enables a more effective use of J-laying in a wider range of conditions, including in shallow water. See page 2, lines 17-21 of the specification.

The present invention is based, at least in part, upon the appreciation that it may sometimes be desirable to J-lay in relatively shallow water, and it may then be desirable not to have any truly straight length of pipe, but rather to begin curvature of the pipe immediately below the tower and even within the tower. This idea of J-laying with a pipe curving within the length of the tower is not taught or suggested in the prior art.

Each of the art rejections relies on the primary reference *Nolan*. However, Applicants submit that *Nolan* relates to S-laying, and not J-laying. Specifically, the Examiner's attention is directed to Figure 12A, which shows the pipe assuming a steeper downward inclination at it leaves the tower, which is evidence that S-laying is occurring, rather than J-laying.

To more clearly distinguish the present invention from *Nolan*, each of the independent claims have been amended to more clearly indicate that the present invention relates to J-laying and not S-laying. In view of the foregoing amendments to the claims, Applicants submit that *Nolan* is no longer relevant to the present invention.

To further emphasize the difference between the present invention which relates to J-laying, and the applied prior art, which relates to S-laying, the claims have been further amended to make it clear that the guide rollers are located such

that they allow some bending of the pipeline to a shallower angle of inclination as the pipeline passes through the roller guide arrangement. As set forth above, in S-laying, the pipe assumes a steeper angle of inclination as it passes from the tower.

In addition to the distinction between S-laying and J-laying, there are other features of the present invention set forth in one or more of the various claims which distinguish the present invention from the prior art.

Specifically, the Examiner's attention is directed to claim 45 wherein the lower guide arrangement is defined as being substantially trumpet shaped, and the trumpet shape is defined such that the lower guide arrangement flares outwardly in the direction travel of the pipeline during laying, and the angle of flare increases in direction of travel of the pipeline during laying.

With regard to the trumpet shaped feature, the Examiner relies upon Figures 3 and 12a-12d of *Nolan*. However, in *Nolan*, the outward flaring increases linearly with regard to the distance that the pipe travels, whereas the claims of the present application which relate to the trumpet shape indicate that the angle of flare increases in the direction of travel of the pipeline during laying, i.e., in a non-linear manner. Accordingly, the prior art does not teach or suggest the trumpet shape of the lower guide arrangement, as now set forth in the claims.

With regard to claims 35 and 44, the Examiner's attention is directed to the fact that the guide rollers are operated by piston and cylinder arrangements, and the control station receives signals from the force monitoring means and provides signals for the operation of the piston and cylinder arrangements for operating the guide rollers. Both *Nolan* and *Shell* fail to disclose piston and cylinder arrangements

for operating guide rollers, nor that the guide rollers can actually be operable in any way. *Shell* merely discloses that one can measure forces on a pipeline that is being laid, but *Shell* discloses that the ship should be moved pursuant to measuring the force on a pipeline in order to alter the shape of the pipeline. Although *Lynch* discloses some form of piston arrangement, it merely acts as a spring and to sense the position of a pipeline. However, there is no indication that a control station provides signals for the operation of the piston arrangement in order to operate guide rollers.

With regard to claim 8, the resistance of the bearings to resilient displacement is more than 100 kN/m. The Examiner alleges that it would have been obvious to use resilient bearings and that discovering the optimal working range is only routine skill in the art. However, while resilient bearings may be known in some applications, there is no teaching in the prior art to provide bearings that are both resiliently displaceable in response to being loaded and displaceable by other means such as a piston and cylinder.

The Examiner discloses that the classification definitions relied upon to support the previous allegation of well known art was not published until December 2000, and is thus not prior art. Thus, Applicants renew the request that the reliance on well known art be supported by prior art, or else withdraw the rejections.

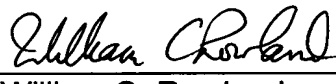
In view of the foregoing amendments and remarks, the Examiner is respectfully requested to reconsider and withdraw the outstanding rejections.

In the event that there are any questions concerning this response, or the application in general, the Examiner is respectfully urged to telephone the undersigned attorney so that prosecution of the application may be expedited.

Respectfully submitted,

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